No. 9400178

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Utah Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Garland'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 31st day of October in the year of our Lord one thousand nine hundred and ninety-four.

Attest:

Kenneth R. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Mike Espy
Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Utah Agricultural Experiment Station

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
UT1706-1

3. VARIETY NAME
Garland

4 ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Utah State University
Logan, UT 84322-4810

5. PHONE *(Include area code)*
(801) 797-2235

FOR OFFICIAL USE ONLY

PVPO NUMBER
9400178

FILING
Date 5/2/94
Time ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $2150.00
Date 5/2/94
Certificate Fee: $275.00
Date Sept. 30, 1994

6. GENUS AND SPECIES NAME
Triticum aestivum

7. FAMILY NAME *(Botanical)*
Poaceae (Gramineae)

8. CROP KIND NAME *(Common Name)*
Wheat

9. DATE OF DETERMINATION
15 Sept. 1992

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
State Agricultural Experiment Station

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. David Hole
Plants, Soils, and Biometeorology Dept.
Utah State University
Logan, UT 84322-4820
PHONE *(Include area code)*: (801) 797-2235

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*
- a. [X] Exhibit A, Origin and Breeding History of the Variety.
- b. [X] Exhibit B, Novelty Statement.
- c. [X] Exhibit C, Objective Description of Variety.
- d. [ ] Exhibit D, Additional Description of Variety.
- e. [X] Exhibit E, Statement of the Basis of Applicant's Ownership.
- f. [X] Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office 4-20-94
- g. [X] Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
[X] YES *(If "YES," answer items 16 and 17 below)* [ ] NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
[X] YES [ ] NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
[ ] YES *(If "YES," through* [ ] Plant Variety Protection Act [ ] Patent Act. Give date: _____ .)
[X] NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
[ ] YES (If "YES," give names of countries and dates)
[X] NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
[signature]	Director, UAES	4-26-94
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
[signature]	Vice President for Research, USU	4-26-94

Exhibit A - Origin and Breeding History

Garland Winter Wheat

Summer 1980:	Original cross made at Logan, by Dr. Wade G. Dewey. Cross number was UT1706 Parentage = NE7060 X UT1195-143 NE7060 has the pedigree: Favorite/5/Cirpiz/4/Jang Kwang//Atl. 66/Cmn/3/Velvet UT1195-143 was a selection from the cross UT755-90-1 X UT1054 F_1 UT755-90-1 was released as Cardon UT1054 F_1 was the F_1 of the cross ID0028 X UT738-274-1 ID0028 was released as Bannock UT738-274-1 was a selection from the cross Columbia X (Delmar X UT283-19-1) UT283-19-1 was a selection from the cross UT175a-53 sel. 2 X (Norin 10 X Brevor 11) sel. UT175a-53 sel. 2 was a selection from the cross UT122a-327-1 X UT148a-239-12 UT122a-327-1 was a selection from the cross UT43e-21 X Ridit UT148a-239-12 was a selection from the cross Oro X Ridit UT43e-21 was a selection from the cross Hussar X Turkey Red Oro was a selection from Norin 10 X Brevor
Summer 1981:	F_1 plants grown at Logan, Utah.
Summers 1982, 1983,1984	F_2 through F_4 generations grown at Logan, UT in modified bulk populations inoculated with common bunt and selected for agronomic and pathological characteristics. Selected seed were bulked for the succeeding generation.
Summer 1985:	F_5 plants grown at Logan, UT in a modified bulk population inoculated with common bunt. one head was selected from agronomically desirable types.
Summer 1986:	Seed from individual heads were grown in $F_{5:6}$ head rows at Logan, UT. Individual agronomically desirable head rows, including UT1706-1, were harvested separately.
Summer 1987:	1706-1 was grown in an unreplicated yield test at Logan UT as a $F_{5:7}$ line. Selection was for superior yielding ability as well as resistance to mildew and other agronomic traits.
Winter 1987:	Protein, test weight, sedimentation and subjective kernel evaluations were performed on 1706-1 to assure adequate breadmaking quality.
Summers 1988, through 1993	1706-1 was tested in the advanced irrigated yield test at Logan, UT.
Summer 1990:	Individual heads of uniform 1706-1 plants were harvested.
Fall 1990	Individual heads of 1706-1 were planted in a breeder seed nursery

Summer 1991:	Breeder seed was harvested and bulked from 200 uniform headrows.
Fall 1991:	1706-1 was planted in a foundation field.
Fall 1992:	1706-1 was planted in a foundation field from previous foundation seed.
Fall 1993:	1706-1 was planted in a foundation field from previous foundation seed and from original breeder seed.
Fall 1993	1706-1 is released and named Garland by the Utah Agricultural Experiment Station.
	Garland is generally uniform and stable with up to 3 white seeds per pound.

Exhibit B - Novelty Statement

Garland Winter Wheat

Garland is unlike any other semi-dwarf hard red winter cultivar that we have observed. To our knowledge, Garland is most similar to Ute. However, there are many substantial differences between the two cultivars including but necessarily limited to:

1. Garland is tan chaffed whereas Ute is bronze chaffed.
2. Garland is resistance to mildew, Ute is susceptible = Erisyphe graminis f. sp. tritici, per letter (email). AAA 12 Sept 1996
3. Garland grows approximately 4 cm shorter than Ute.
4. Garland seed averages 2 pounds per bushel heavier in test weight than Ute.
5. Garland has better resistance to dwarf smut (*Tilletia contraversa* Kuhn) than Ute
6. In areas where mildew is a problem, garland consistently out yields Ute by a large margin.

Exhibit B ADDENDUM for PVP Application for 'Garland' Wheat.

Garland and Ute Comparative Data

Cultivar	1988	1989	1990	1991	1992	1993	Average		Significance
Test Weight (Lbs/Bu)									
Ute	57.0	56.6	55.1	57.7	55.7	59.5	56.9		**
Garland	57.7	59.1	58.2	59.8	59.0	61.1	59.2		
Protein (%)									
Ute	13.2	13.3	13.5	13.1	13.4	13.7	13.4		*
Garland	13.4	14.4	14.2	13.8	13.6	13.8	13.9		
Plant Height (inches)									
Ute	30.0	33.5	32.5	32.0	32.0	28.0	31.3		*
Garland	29.0	31.8	31.2	31.0	28.0	27.0	29.7		
Mildew (0=no infection, 5=severe infection)									
Ute	4.0	5.0	4.0	5.0	5.0	4.0	4.5		**
Garland	0.0	0.5	2.2	0.7	2.0	1.0	1.1		
Dwarf Bunt (% smutted heads)									
Ute	30.0	30.0	4.0	12.0	15.0	6.0	16.2		**
Garland	15.0	15.0	0.5	0.5	3.0	2.0	6.0		
Heading Date (June)									
Ute	8	7	9	15			9.8		
Garland	8	8	8	15			9.8		
Yield (bushel/acre)									
Ute	131.3	110.3	98.5	84.1	93.0	29.1	103.4		**
Garland	133.7	156.8	141.9	145.3	140.1	133.4	143.6		
1993 yields are not calculated into the average due to severe snow mold losses of Ute.									

Individual values are based on the average of 4 replications in a given year at the Utah Agricultural Experiment Station North Logan farm.

Statistical tests done using SAS systems software. (*) indicates significantly different means at the 5% level and (**) indicates significantly different means at the 1% level

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
COMMODITIES SCIENTIFIC SUPPORT DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY

WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)

Utah Agricultural Experiment Station

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)

Utah State University
Plants, Soils, & Biometeorology Dept.
Logan, UT 84322-4820

FOR OFFICIAL USE ONLY

PVPO NUMBER 9400178

VARIETY NAME OR TEMPORARY DESIGNATION

Garland

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____ [2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____

[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

[2][4][7] FIRST FLOWERING [2][5][7] LAST FLOWERING

4. MATURITY (*50% Flowering*):

[0][1] NO. OF DAYS *EARLIER* THAN ..... [5] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][3] NO. OF DAYS *LATER* THAN ..... [7] 4 = LEMHI 5 = NUGAINES 6 = LEEDS
7 = Stephens

5. PLANT HEIGHT (*From soil level to top of head*):

[0][7][7] CM. HIGH

[ ][ ] CM. TALLER THAN ..... [ ]

[1][2] CM. SHORTER THAN ..... [5] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[0][4] NO. OF NODES (*Originating from node above ground*)

[1] Waxy bloom: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[1][8] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[2] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____

[2] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
Sparse

[1][0] MM. LEAF WIDTH (*First leaf below flag leaf*)

[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[2][0] CM. LEAF LENGTH (*First leaf below flag leaf*):

FORM LMGS 470-6 (6-82) (Formerly Form LPGS 470-6 (3-79), which may be used)

11. HEAD:

[2] Density: 1 = LAX 2 = DENSE

[4] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) oblong

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[7] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): Tan

[0 9] CM. LENGTH [1 4] MM. WIDTH

12. GLUMES AT MATURITY:

[3] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[3] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[1] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[1] 1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify)

[0 7] MM. LENGTH [0 4] MM. WIDTH [5 0] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[2] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[ ] STEM RUST (Races) [ ] LEAF RUST (Races) [ ] STRIPE RUST (Races) [ ] LOOSE SMUT

[2] POWDERY MILDEW [2] BUNT [ ] OTHER (Specify)

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

[ ] SAWFLY [ ] APHID (Bydv.) [ ] GREEN BUG [1] CEREAL LEAF BEETLE

[ ] OTHER (Specify) HESSIAN FLY RACES: [ ] GP [ ] A [ ] B [ ] C [ ] D [ ] E [ ] F [ ] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Ute	Seed size	Meridian
Leaf size	Ute	Seed shape	Meridian
Leaf color	Ute	Coleoptile elongation	Ute
Leaf carriage	Ute	Seedling pigmentation	Ute

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

MAY 2 1991

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Exhibit E - Statement of the Basis of Applicants Ownership

Garland Winter Wheat

The original crosses and selection of Garland (UT1706-1) were made by Dr. Wade Dewey, plant breeder at the Utah Agricultural Experiment Station, at Utah State University, Logan, UT. Following Dr. Dewey's retirement in 1989, Testing and further selection were under the direction of Dr. Rulon Albrechtsen, and then Dr. David Hole, plant breeders at the Utah Agricultural Experiment Station. By agreement between employee and the Utah Agricultural Experiment Station and Utah State University, all rights to any invention, discovery or development made by an employee are assigned to the employer. No rights to such invention, discovery or development are retained by the employee.